

# Early Career Astrobiologists Explore Ancient Life



Group Leader Professor Van Kranendonk (UNSW) describes the geological context outside Marble Bar, Western Australia.



**INNOVATION** | Six NAI-supported early career astrobiologists participated in the Astrobiology Grand Tour, an informative and immersive experience that provided an unparalleled introduction to and presentation of sites in Western Australia relevant to the study of early life on Earth. The Grand Tour was organized by the University of New South Wales (UNSW) and the Australian Centre for Astrobiology (ACA).

**DISCOVERY** | Participants visited the extant stromatolites in Hamelin Pool, Shark Bay (top left) followed by fossil stromatolite reefs in the Turee Creek Formation (~2.3 Gya), Tumbiana Formation (2.7 Gya, top right), and Dresser Formation (3.5 Gya) in the Pilbara region of Australia. Additionally, the tour visited the majestic and extensive banded iron formations (BIFs) in the Karijini National Park (top middle) and other locations relevant to studying early life and its environment.

**RELEVANCE** | Learning to distinguish the hallmarks of biological morphologies in fossil life on Earth is essential for correctly interpreting potential future evidence for life beyond our planet. Additionally, this experience afforded an excellent opportunity to consider the drastic transitions in the atmospheric composition of early Earth around the Great Oxidation Event (GOE) and the evolution of various metabolisms.



An ancient fossilized microbial mat found in the Dresser Formation and dated to ~3.5 billion years old. One of the oldest known.